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ABSTRACT

This language arts learning module cffers a structure to teachers for leading junior high school class activities to investigate solar energy, its origin, and effect. The module furnishes a pre-post test, a schedule for library and research work, a basic vocabulary list, and a bibliography. (CP)

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SOLAR ENERGY AND REFERENCE SKILLS

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Solar Energy Education Project

SE023 513

- PREFACE -

Solar Energy is becoming an increasingly important aspect of our society. It is essential that students know as much about solar energy as possible.

This unit deals with an investigation of solar energy in relationship to its origin, composition and effect on the earth.

The investigation is integrated with the language arts program. Students are introduced to the use of various reference materials. These include encyclopedias, almanacs, indexes, readers guide to current periodicals, filmstrips, newspapers and books.

The end result will be a research paper which will encompass the students' knowledge on solar energy.

OBJECTIVES

OVERALL OBJECTIVES -

1. Students will know how to locate and use an index of any reference book.
2. Students will know how to use the readers guide to current periodicals.
3. Students will know how to use the card catalogue.
4. Students will become familiar with such reference material as the encyclopedia, almanac, Book of Popular Science, Famous First Facts.

SPECIFIC OBJECTIVES -

1. Students will know that solar energy is produced by a carbon-helium reaction.
2. Students will know that energy takes the form of short wave, long wave, infrared ray, light rays and x-ray.
3. Students will know that most solar particles are trapped by the earth's magnetic field.
4. Students will know that the sun supplies most of the available energy.
5. Students will know that the sun heats the earth, water and atmosphere.
6. Students will know that the sun is necessary to sustain life of all green plants which in turn produce oxygen for humans.
7. Students will know that solar energy produces wind.
8. Students will know that solar energy produces moisture.
9. Students will know that man is now trying to use solar energy to heat water, to heat homes and to distill water.
10. Students will know that to implement solar energy at present requires much research.

PRE/POST TEST

1. Energy means _____.
   1) force 2) source 3) strength

2. _____% of solar energy is absorbed or reflected.
   1) 10 2) 25 3) 75

3. The most recent theory about the sun's radiation was thought up by _____.
   1) Galilleo 2) Einstein 3) Buthe

4. Most of the sun's radiation is trapped by the earth's _____.
   1) magnetic field 2) crust 3) atmosphere

5. The sun is composed mostly of _____.
   1) soil 2) carbon 3) gas

6. Solar energy is stored in _____.
   1) air 2) plants 3) water

7. The sun is composed of _____parts.
   1) 4 2) 2 3) 6

8. Light rays are necessary in order that a plant can _____.
   1) die 2) have color 3) grow

9. Infrared radiation supplies the earth with _____.
   1) rays 2) heat 3) color

10. Moisture is caused by _____.
    1) x-ray 2) light ray 3) infrared ray

11. The sun's energy is formed _____.
    1) in the core 2) on the surface 3) in the atmosphere

12. The ionosphere is created by _____.
    1) moon 2) solar radiation 3) wind

13. To take advantage of solar heating a home should face _____.
    1) south 2) west 3) north

14. In order to use solar heat the sun's rays must be _____.
    1) reflected 2) stored 3) screened

15. Glauber's salt is used _____.
    1) to spice food 2) to distill water 3) to absorb heat

PRE/POST TEST, CONTINUED

16. To find an article in a magazine you should refer to _____.

    1) card catalogue 2) index 3) reader's guide to current periodicals

17. In order to find an article on a specific subject in an encyclopedia you should refer to _____.

    1) table of contents 2) index 3) glossary

18. A card catalogue will tell you where to find _____.

    1) magazines 2) newspapers 3) books

19. To locate information which has occurred within a certain year you refer to _____.

    1) almanac 2) encyclopedia 3) book

20. Books on solar energy would be located under the following heading.

    _____

    1) general works 2) fiction 3) science

ACTIVITIES

DAY I -

1. Distribute the pretest.
2. After the test has been collected, discuss the topic of solar energy.
3. Define the topic.
4. Make an outline on the board to be used for research to include origin, composition and effect on earth.

DAY II -

1. Review the various reference materials to be used beginning with the encyclopedias.
2. Make a list of the encyclopedias in order of reading difficulty.
   a. Britannica
   b. Americana
   c. Merit
   d. New Book of Knowledge
   e. Comptons
   f. Britannica Jr.
   g. World Book
3. Review the concept and use of an index.
4. Review the concept and use of a card catalogue.

DAY III -

1. At the library, librarian will review the use of the periodical guide.
2. Librarian will also review use of filmstrip catalogue and newspaper file.

DAY IV -

1. Class is to be divided into three groups. One group is to work in the encyclopedias. The second group is to work with filmstrips and newspaper articles. The third group is to work with books located on the shelves. These books should be reserved for library use only.

DAY V -

1. Research at the library to continue. Each group to alternate the reference material they are working with.

DAY VI -

1. Continue research at the library. Groups are to alternate the reference material they are using.

DAY VII -

1. Students are to be given one class period to work on the completion of their report.

ACTIVITIES, CONTINUED

DAY VIII -

1. Distribute post test.
2. Review and discuss the questions on the test.

DAY IX -

1. Collect the reports and make plans for displaying the reports.

VOCABULARY

ENERGY	- the capability to do work
RADIATION	- the act of spreading around as from a center
ATMOSPHERE	- the mass of air surrounding the earth
SOLAR	- of or related to the sun
ATOMIC ENERGY	- energy derived from the mass converted into energy or nuclear transformation
NUCLEAR	- relating to a nucleus or a center
ELECTRON	- a small particle orbiting about an an atoms nucleus, having a unit of negative electrical charge, a small mass
ION	- an electrically charged particle or group of atoms
MAGNETIC	- having an unusual power or ability to attract
GLAUBER'S SALT	- salt which will melt without changing temperature when heat is applied. Also will change back to crystals when heat is removed.

BOOKS

Asimov	The Sun
Branley	The Sun; Star Number One
Branley	Solar Energy
Cartwright	Sunlight
Halacy	Experiments with Solar Energy
Halacy	Fabulous Fireball
Hoke	Solar Energy
Wolrabe	Exploring Solar Energy